

REMARKS

Claims 1, 3, 7, 9, 13, 14, 17, 19-21, 23, 26-31, 33, 37, 41 and 42 have been amended and claims 2, 18, 22, 32, 39 and 40 have been cancelled without prejudice or disclaimer. Claims 1, 3-17, 19-21, 23-31, 33-38, 41 and 42 are pending and under consideration. No new matter is presented in this Amendment.

CLAIM OBJECTIONS

Claims 2, 7, and 40 are objected to because of minor informalities.

Applicants thank the Examiner for pointing out the minor informalities. Accordingly, claim 7 has been amended to correct such minor informalities. Furthermore, Applicants bring to the Examiner's attention that claim 40 does not include the informality noted in the Office Action but rather claim 42 recites such informality. Therefore, Applicants have amended claim 42 to correct the minor informality.

Furthermore, it is noted that claim 2 has been cancelled without prejudice or disclaimer of the subject matter recited therein. Accordingly, the rejection of claim 2 is moot.

DOUBLE PATENTING

Claim 8 is objected under 37 CFR 1.75 as being a substantial duplicate of claim 14.

Applicants have corrected the dependency of claim 14 correcting the minor informality of the substantial duplicate claim.

REJECTIONS UNDER 35 U.S.C. §112:

Claims 3, 5, 6, 11, and 12 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding the rejection of claim 3, it is noted that claim 3 has been amended to correct the minor informality of the claim.

Regarding the rejection of claims 5, 6, 11 and 12, an explanation of what the ranges are meant to encompass can be found in the specification at least at paragraphs [0063] through

[0067] of the specification and in FIGS. 10 and 11. For example, as recited in paragraph [0064] of the specification and illustrated in FIG. 10, when a range of jitter that is allowable by a system is set to 7%, a range of a ratio of T_{lp}/T_{mp} corresponds to 0.9 - 1.3.

Accordingly, Applicants respectfully submit that claims 5, 6, 11 and 12 are definite and therefore fully comply with the requirements of 35 U.S.C. § 112, second paragraph.

Therefore, Applicants respectfully request that the rejection of claims 5, 6, 11 and 12 under 35 U.S.C. § 112, second paragraph, be withdrawn.

REJECTIONS UNDER 35 U.S.C. §102:

Claims 1-25, 27-32, and 37-40 are rejected under 35 U.S.C. §102(b) as being anticipated by Yokoi et al., hereafter Yokoi (U.S. Patent 5,732,062).

Regarding the rejection of independent claim 1, it is noted that claim 1 recites an optical recording medium comprising a recording layer having a specific zone in which additional recording information including power information for high-speed recording of a recording pattern for data recording is recorded, and wherein the power information indicates that the recording pattern is formed of a recording multi-pulse train including a first pulse, a multi-pulse train and/or a last pulse, wherein the recording multi-pulse train has high and low write power levels, and the low write power level is set to be higher than a bias power level.

The Office Action relies on Yokoi for such an alleged teaching. However, Yokoi discloses a recording medium comprising a recording layer changeable between a crystal phase and an amorphous phase. Yokoi also discloses an information recording system including a light source emitting a multi-pulse light which includes a head heating pulse, a head cooling pulse, and rear heating pulse and rear cooling pulse (abstract and column 4, lines 59-67). Accordingly, Yokoi discloses a recording medium including a recording layer and a system for recording or erasing information from the recording medium. Yokoi however, fails to teach or suggest a recording layer having a specific zone and furthermore, Yokoi fails to teach or suggest that in the specific zone additional recording information including power information for high-speed recording of a recording pattern for data recording is recorded. Yokoi also fails to teach or suggest that the power information indicates that the recording pattern is formed of a recording multi-pulse train.

Accordingly, Applicants respectfully assert that the rejection of claim 1 under 35 U.S.C. § 102 (b) should be withdrawn because Yokoi fails to teach or suggest each feature of

independent claim 1.

Furthermore, Applicants respectfully assert that the rejection of dependent claims 3-16 under 35 U.S.C. § 102(b) should be withdrawn at least because of their dependence from claim 1 and the reasons set forth above, and because the dependent claims include additional features which are not taught or suggested by the prior art. Therefore, it is respectfully submitted that claims 3-16 also distinguish over the prior art.

Furthermore, it is noted that claim 2 has been cancelled without prejudice or disclaimer. Accordingly, the rejection of claim 2 is moot.

Regarding the rejection of independent claim 17, it is noted that claim 17 recites a method of recording data onto an optical recording medium, the method comprising: generating a recording waveform having a recording pattern for high-speed recording; and forming a first level of the data as a mark and a second level of the data as a space, using the generated recording waveform, wherein the recording pattern is formed of recording multi-pulse trains including a first pulse, a multi-pulse train, and/or a last pulse, wherein power levels of the recording multi-pulse trains are equal to a high or low write power level, and a **low write power level is higher than a bias power level for a last pulse** of the recording multi-pulse trains.

The Office Action relies on Yokoi and in particular in FIG. 7, pulse levels Af, Ar and pulse C, for a teaching of a multi-pulse train having high and low write power levels, and the low write power level being set higher than a bias power level. Applicants respectfully note that Yokoi simply teaches that pulse C corresponds to a cooling pulse (column 14, lines 19-33) but fails to teach or suggest whether this cooling pulse is a low write power level or whether this low write power level is higher than a bias power level for a last pulse of the recording multi-pulse trains.

Accordingly, Applicants respectfully assert that the rejection of claim 17 under 35 U.S.C. § 102 (b) should be withdrawn because Yokoi fails to teach or suggest each feature of independent claim 17.

Furthermore, Applicants respectfully assert that the rejection of dependent claims 19 and 20 under 35 U.S.C. § 102(b) should be withdrawn at least because of their dependence from claim 17 and the reasons set forth above, and because the dependent claims include additional features which are not taught or suggested by the prior art. Therefore, it is respectfully submitted that claims 19 and 20 also distinguish over the prior art. Regarding the rejection of dependent claim 18, it is noted that claim 18 has been cancelled without prejudice or disclaimer

of the subject matter recited therein. Accordingly, the rejection of claim 18 is moot.

Regarding the rejection of independent claim 21, it is noted that claim 21 recites a method of recording data onto an optical recording medium, the method comprising: generating a recording waveform having a recording pattern and an erasure pattern with a multi-pulse train for high-speed recording; and forming a first level of the data as a mark and a second level of the data as a space, using the generated recording waveform, wherein the recording pattern is formed of a recording multi-pulse train including a first pulse, a multi-pulse train, and/or a last pulse, wherein power levels of the recording multi-pulse train are equal to a high or low write power level, and a low write power level is higher than a bias power level for a last pulse of the recording multi-pulse train.

As noted above, the Office Action relies on Yokoi and in particular in FIG. 7, pulse levels Af, Ar and pulse C, for a teaching of a multi-pulse train having high and low write power levels, and the low write power level being set higher than a bias power level. However, as also noted above, Yokoi simply teaches that pulse C corresponds to a cooling pulse (column 14, lines 19-33) but fails to teach or suggest whether this cooling pulse is a low write power level or whether this low write power level is higher than a bias power level for a last pulse of the recording multi-pulse trains.

Accordingly, Applicants respectfully assert that the rejection of claim 21 under 35 U.S.C. § 102 (b) should be withdrawn because Yokoi fails to teach or suggest each feature of independent claim 21.

Furthermore, Applicants respectfully assert that the rejection of dependent claims 23-25 and 27-30 under 35 U.S.C. § 102(b) should be withdrawn at least because of their dependence from claim 21 and the reasons set forth above, and because the dependent claims include additional features which are not taught or suggested by the prior art. Therefore, it is respectfully submitted that claims 23-25 and 27-30 also distinguish over the prior art. Regarding the rejection of dependent claim 22, it is noted that claim 22 has been cancelled without prejudice or disclaimer of the subject matter recited therein. Accordingly, the rejection of claim 22 is moot.

Regarding the rejection of independent claim 31, it is noted that claim 31 recites an apparatus for recording data onto an optical recording medium, the apparatus comprising: a recording waveform generating circuit, which generates a recording waveform having a

recording pattern for high-speed recording of the data; and a pickup unit, which forms a mark or space by irradiating light onto the optical recording medium according to the generated recording waveform to record the data, wherein the recording pattern is formed of a recording multi-pulse train including a first pulse, a multi-pulse train, and/or a last pulse, wherein power levels of the recording multi-pulse train are equal to a high or low write power level, and a low write power level is higher than a bias power level for a last pulse of the recording multi-pulse train.

As noted above, the Office Action relies on Yokoi and in particular in FIG. 7, pulse levels Af, Ar and pulse C, for a teaching of a multi-pulse train having high and low write power levels, and the low write power level being set higher than a bias power level. However, as also noted above, Yokoi simply teaches that pulse C corresponds to a cooling pulse (column 14, lines 19-33) but fails to teach or suggest whether this cooling pulse is a low write power level or whether this low write power level is higher than a bias power level for a last pulse of the recording multi-pulse trains.

Accordingly, Applicants respectfully assert that the rejection of claim 31 under 35 U.S.C. § 102 (b) should be withdrawn because Yokoi fails to teach or suggest each feature of independent claim 31.

Furthermore, Applicants respectfully assert that the rejection of dependent claims 37 and 38 under 35 U.S.C. § 102(b) should be withdrawn at least because of their dependence from claim 31 and the reasons set forth above, and because the dependent claims include additional features which are not taught or suggested by the prior art. Therefore, it is respectfully submitted that claims 37 and 38 also distinguish over the prior art. Regarding the rejection of dependent claim 32, it is noted that claim 32 has been cancelled without prejudice or disclaimer of the subject matter recited therein. Accordingly, the rejection of claim 32 is moot.

Regarding the rejection of independent claims 39 and 40, it is noted that claims 39 and 40 have been cancelled without prejudice or disclaimer of the subject matter recited therein. Accordingly, Applicants note that the rejection of claims 39 and 40 is moot.

REJECTIONS UNDER 35 U.S.C. §103:

Claims 26, 33, 34, 35, 36, 41, and 42 are rejected under 35 U.S.C. §103(a) as being unpatentable over Yokoi as applied to claims 1-25, 27-32, and 37-40 above, and further in view of Minemura et al (hereafter Minemura)(U.S. Patent 5,608,710).

Regarding the rejection of claims 26, 33-35 and 36 it is noted that these claims depend from independent claims 21 and 31, and as noted above, Yokoi fails to teach or suggest the novel features recited in the independent claims.

Minemura discloses an optical disk drive and medium for improving rewrite times, in order to increase the density of a phase-change optical disk by adapting a specific record pulse width modulation (column 1, lines 44-48). To achieve this, Minemura discloses recording a record mark with a length of NY as N adjacent spatially-independent very-small amorphous points, each with a length of L or less. Thereby, because a melted area of one amorphous point does not reach an adjacent amorphous point, the flow of the record film is controlled to improve the rewrite life (column 1, lines 49-56). Accordingly, Minemura discloses a train of spatially-independent very-small amorphous point marks formed on a phase-change optical medium for stable high density recording and improved rewrite times. However, Minemura fails to teach or suggest a low write power level being higher than a bias power level for a last pulse of the recording multi-pulse train, as recited in independent claims 21 and 31, upon which claims 26 and 33-36 depend. Therefore, Minemura fails to cure the deficiencies of Yokoi.

Accordingly, Applicants respectfully assert that the rejection of claims 26 and 33-36 under 35 U.S.C. § 103 (a) should be withdrawn because neither Yokoi nor Minemura, whether taken singly or combined teach or suggest each feature of independent claims 21 and 31 upon which claims 26 and 33-36 depend.

Regarding the rejection of independent claim 41, it is noted that claim 41 recites an optical recording medium comprising, amongst other novel features, a recording layer wherein time durations of high and low levels of an erase power are controlled with respect to a timing window T_w having a range of 0.25 to 2.0 T_w , and data is recorded onto the optical recording medium while selecting time durations of high and low levels of the erase power suitable for thermal characteristics of the optical recording medium, and wherein the power information indicates that a recording pattern is formed of a recording multi-pulse train including a first pulse, a multi-pulse train and/or a last pulse, wherein the recording multi-pulse train has high and low write power levels, and the low write power level is set to be higher than a bias power level.

The Office Action relies on Yokoi for such teaching, in particular column 8, lines 41-52. However, although Yokoi discloses various pulses including a heating pulse having a pulse span of $0.5T$ and cooling pulse having a pulse span of 0.75 , Yokoi fails to teach or suggest $0.25T_w$, as recited in the independent claim. Accordingly, Yokoi fails to teach or suggest this novel feature.

Minemura also fails to teach or suggest this novel feature and thus fails to cure the deficiencies of Yokoi.

Accordingly, Applicants respectfully assert that the rejection of claim 41 under 35 U.S.C. § 103 (a) should be withdrawn because neither Yokoi nor Minemura, whether taken singly or combined teach or suggest each feature of independent claim 41.

Regarding the rejection of independent claim 42, it is noted that claim 42 recites an optical recording medium comprising a recording layer wherein when time periods of recording multi-pulse trains and erase multi-pulse trains are equal to $2.0T_w$, respectively, a quality mark is formed by increasing an amount of incident light on the optical recording medium, without increasing a write power and an erase power.

The Office Action relies on Yokoi for such teaching and in particular notes that claim 42 contains limitations similar to those of claims 23, 25 and 26 and therefore is rejected over the same grounds.

However, Applicants respectfully note that neither of claims 23, 25 or 26 recite increasing an amount of incident light on the optical recording medium, without increasing a write power and an erase power, as recited in independent claim 42. Therefore, Applicants assert that Yokoi fails to teach or suggest at least these novel features of independent claim 42. Furthermore, Minemura also fails to teach or suggest this novel feature and thus fails to cure the deficiencies of Yokoi.

Accordingly, Applicants respectfully assert that the rejection of claim 42 under 35 U.S.C. § 103 (a) should be withdrawn because neither Yokoi nor Minemura, whether taken singly or combined teach or suggest each feature of independent claim 42.

CONCLUSION:

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.


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If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 503333.

Respectfully submitted,

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